## Old Growth

Issue Related to the Resource

Timber harvesting and temporary road construction may impact portions of stands identified as old growth during field surveys. Thinning treatments have been proposed in locations that contain small old growth patches.

Methodology and Scope of the Analysis

As directed by the Forest Plan (via the clarification letter signed in July of 2015 to resolve a Forest Plan appeal) any proposal to manage old growth will analyze the contribution of identified patches to the representation, distribution, and abundance of the specific forest type within the old growth community classifications and the desired condition of the appropriate prescription. The Forest Plan does not specify the precise criteria for the adequate representation, distribution, and abundance of all specific forest types within old growth forest community types 21 and 25 community classifications at relevant scales; therefore, those issues are to be resolved at project level analysis. This analysis intends to determine the context and intensity of impact from the proposed management of old growth forest community type 21 within the analysis area.
The old growth analysis for this project mirrored the methodology of the old growth analysis completed for the Forest Plan which outlines existing, possible, and future old growth categories. The Little Piney River 6$^{th}$ level watershed, totaling 30,534 acres, was utilized as the boundary for the analysis (see *Figure 1- Old Growth Patch Size Distribution map*). Old growth determinations for existing, possible and future acreages were also grouped by old growth forest community type and forest type (see table below).

**Table 6. Old growth forest community types and associated forest types**

| Old Growth Forest Community Type | Forest Type |
|---|---|
| 1 - Northern Hardwood Sugar maple | Sugar maple-Beech-Yellow birch (81) |
| 5- Mixed Mesophytic | Cove hardwood-White pine-Hemlock (41), Yellow poplar (50), Yellow poplar-White oak-Red oak (56), Sweet gum-Yellow poplar (58), Black cherry (70), Black walnut (82) |
| 21- Dry-Mesic Oak | Chestnut oak (52), White oak-Red oak-Hickory (53), White oak (54), Northern red oak (55), Scarlet oak (59), Chestnut oak Scarlet oak (60) |
| 25 – Dry and Dry –Mesic Oak Pine | Upland hardwood-White pine (42), Chestnut oak-Scarlet oak-Yellow pine (45), Bottomland hardwood-Yellow pine (46), White oak-Black oak-Yellow pine (47), Northern red oak-Hickory-Yellow pine (48) |
| 2a, 2b, 2c - Conifer Northern Hardwood | Red pine (2), White pine (3), White pine-Hemlock (4), Hemlock (5), Fraser fir (6), Red |

| | |
|---|---|
| | spruce-Fraser fir (7), Hemlock-hardwood (8), White pine-Cove hardwood (9), White pine-Upland hardwood (10), Red spruce- Northern hardwood (17) |
| 5 – Mixed Mesophytic | Cove hardwood-White pine-Hemlock (41), Yellow poplar (50), Yellow poplar-White oak-Red oak (56), Sweet gum-Yellow poplar (58), Black cherry (70), Black walnut (82) |

The recently completed George Washington and Jefferson National Forests Monitoring and Evaluation Report (M&E Report) for fiscals years 2015 – 2019 includes updated modeled acreages of possible and future old growth by old growth forest community types on page 18 – 19 (Table 7) for the George Washington National Forest (located at George Washington & Jefferson National Forests - Land & Resources Management (usda.gov)). The report provides a contextual backdrop for the effects analysis of this project. The possible and future old growth as identified in the M&E Report outlines that old growth forest community type 21, which is the type proposed for management, has increased by approximately 80,000 acres since 2004.

*Survey to Determine Existing Old Growth*

Existing old growth within proposed treatment units was identified through survey efforts utilizing the revised protocol issued in March 2016. Old growth likely exists in other areas of suitable management prescriptions not accounted for in the modeled possible acreages in this analysis below, therefore the full existing old growth acreages are likely greater than disclosed in this analysis.

*Determining Possible Old Growth*

Forest stands within the project area which meet the preliminary inventory criteria in Table B-1 from the Forest Plan Appendix B, page B-2) from the Old Growth Guidance based on stand age were classified as possible old growth. Field Sampled Vegetation (FSVeg) GIS data informed this analysis. See table 7 below for excerpted pertinent information from Table B-1 in the Forest Plan Appendix B. Although not all of the stands would likely meet all criteria for existing old growth, this is the best estimate of the acreage and location of possible old growth in the project area. The determination of a stand's status as existing old growth as defined by the Region 8 Old Growth Team entitled Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region, Forestry Report R8-FR 62, 1997 (Old Growth Guidance) is based on age, past disturbance, basal area, and tree size. Although, only age is used to determine possible old growth.

The Forest Plan management prescriptions included in the old growth analysis area that contribute to possible old growth include 7B Scenic Corridor and Watershed and 13 Mosaics of Wildlife Habitat. The project area contains and is largely surrounded by unsuitable Forest Plan management prescriptions such as the Mt. Pleasant National Scenic Area.

**Table 7. Old growth community types and minimum age classes for possible old growth eligibility**

| Old Growth Forest Community Type | Minimum Age of the Oldest Class* |
|---|---|
| 1 - Northern Hardwood Sugar maple | 100 |
| 21- Dry-Mesic Oak | 130 |
| 2a, 2b, 2c - Conifer Northern Hardwood | 140 |
| 5 – Mixed Mesophytic | 140 |
| 25- Dry and Dry-Mesic Oak-Pine | 120 |

*Minimum age class as identified utilizing FSVeg data was the only criteria utilized to determine the possible future old growth acreages below, Table 9.

*Determining Future Old Growth*

Future old growth is defined in the Forest Plan as stands or patches that may, or may not, currently meet the operational definition for existing old growth, but are allocated to management prescription areas that will not allow timber harvest (unsuitable) and thus allow the stands to mature and develop old growth attributes.

Existing Situation

*Existing Old Growth*

Appendix B, Table B1 of the Forest Plan lists the operational criteria for determining existing old growth. Pursuant to Forest Wide Standard FW-85, an inventory was conducted on all stands proposed for harvest, as well as the temporary road locations, for existing old growth conditions. The results of the survey yielded that portions of harvest unit #s 1, 3, and 6 contain patches that met the operational criteria for old growth type 21 – dry-mesic oak. Variable retention is proposed for these units. The results of the old growth surveys are located in the project planning record. The table below provides a summary of the units where old growth resources have been identified within stands proposed for harvesting. The acreages of old growth in Units 1, 3, and 6 were found to be less than originally estimated in the Draft EA. Additional field work and GIS mapping processes cumulatively led to more accurate refined acres that reflect conditions on the ground (see *Figure 2- Existing Old Growth map*).

**Table 8. Old Growth Community Types Identified in Harvest Units**

| Unit Number | Comp/Stand | Forest Type | Old Growth Type | Approximate Acres |
|---|---|---|---|---|
| 1 | 1168/8 | 55 (northern red oak) | Type 21 dry mesic oak | 12 |
| 3 | 1178/70 | 52 (chestnut oak)<br>53 (white oak, n.red oak-hickory) | Type 21 dry mesic oak | 1 |

| | | | | |
|---|---|---|---|---|
| | | 55 (northern red oak | | |
| 6 | 1177/17 | 53 (white oak, n.red oak-hickory)<br>55 (northern red oak | Type 21 dry mesic oak | 12 |

*Possible Old Growth*

As outlined in the methodology section above, the possible old growth acreages were derived from FSVeg data. Possible old growth was determined by first screening for suitable management prescriptions (7B and 13 in the project area) and then screened by the specific age minimums based on the old growth forest community type. This summary is outlined in Table 9 below (see *Figure 3- Possible Old Growth map*).

**Table 9. Possible old growth by Forest Community Type and Forest Type for the Piney River Project Area**

| Old Growth Forest Community Type | Forest Type Code | Forest Type | Acres | Total Acres for Each Forest Community Type |
|---|---|---|---|---|
| 1 - Northern Hardwood Sugar maple | 81 | Sugar maple-beech-yellow birch | 15 | |
| TOTAL for 1 – Northern Hardwood Sugar maple | | | | 15 |
| 21- Dry-Mesic Oak | 52 | Chestnut oak | 550 | |
| | 53 | White oak-northern red oak-hickory | 406 | |
| | 55 | Northern red oak | 135 | |
| TOTAL for 21 – Dry Mesic Oak | | | | 1091 |
| 2a, 2b, 2c - Conifer Northern Hardwood | 8 | Hemlock-hardwood | 21 | |
| TOTAL for 2a, 2b, 2c - Conifer Northern Hardwood | | | | 21 |
| 5 – Mixed Mesophytic | 56 | Yellow poplar-white oak-northern red oak | 216 | |
| TOTAL for - 5 – Mixed Mesophytic | | | | 216 |
| **TOTAL Acres Possible Old Growth** | | | | 1,343 |

*Future Old Growth*

As outlined in the methodology section above, the future old growth acreages were derived from FSVeg data. Future old growth was determined by screening for unsuitable management prescriptions (12D Remote Backcountry, 1A Designated Wilderness, 4A Appalachian National Scenic Trail Corridor, 7E1 Dispersed Recreation Areas (unsuitable), 4D Special Biological Area,

5B Designated Communication Site, 4F Mount Pleasant National Scenic Area, and an Inventoried Roadless Area in the project area). This summary is outlined in the table below (see *Figure 4- Future Old Growth map*).

**Table 10. Future old growth by Forest Community Type and Forest Type for the Piney River Project Area**

| Old Growth Forest Community Type | Forest Type Code | Forest Type | Acres | Total Acres for Each Forest Community Type |
|---|---|---|---|---|
| 1 - Northern Hardwood Sugar maple | 81 | Sugar maple-beech-yellow birch | 54 acres | |
| TOTAL for 1 – Northern Hardwood Sugar maple | | | | 54 acres |
| 21- Dry-Mesic Oak | 52 | Chestnut oak | 2824 acres | |
| | 53 | White oak-northern red oak-hickory | 2069 acres | |
| | 55 | Northern red oak | 1013 acres | |
| | 59 | Scarlet oak | 15 acres | |
| | 60 | Chestnut oak-scarlet oak | 1 acres | |
| | 80 | Upland oak | 125 acres | |
| TOTAL for 21 – Dry Mesic Oak | | | | 6,047 acres |
| 25 – Dry and Dry – Mesic Oak Pine | 42 | Upland hardwoods-white pine | 46 acres | |
| | 48 | Northern red oak-hickory- yellow pine | 14 acres | |
| TOTAL for 25 – Dry and Dry –Mesic Oak Pine | | | | 60 acres |
| 2a, 2b, 2c - Conifer Northern Hardwood | 3 | White pine | 11 acres | |
| | 8 | Hemlock-hardwood | 26 acres | |
| TOTAL for 2a, 2b, 2c - Conifer Northern Hardwood | | | | 37 acres |
| 5 – Mixed Mesophytic | 50 | Yellow poplar | 500 acres | |
| | 56 | Yellow poplar-white oak-northern red oak | 3889 acres | |
| | 70 | Black cherry | 93 acres | |
| TOTAL for - 5 – Mixed Mesophytic | | | | 4,482 acres |
| **TOTAL Acres Future Old Growth** | | | | 10,680 Acres |

*Old Growth Patch Size Distribution*

The Little Piney River 6th level watershed boundary utilized for the analysis encompasses 30,534 acres, approximately 15,852 acres of which are Forest Service land. Aside from the existing, possible, and future old growth areas, the remainder of Forest Service land in the watershed is comprised of suitable management prescriptions that are identified in FSVeg to have age classes lower than would designate them as old growth per their old growth forest community type. These acres are accounted for below as "not identified". Within the unidentified acreage there could be old growth acres that exist, but were not identified as part of this effort either due to potential errors or inaccuracies in the FSVeg data or lack of old growth surveys outside of the proposed harvest units.

**Table 11. Summary of acreages for the identified analysis area**

| Old Growth Type | Acres |
|---|---|
| Not identified | 3,804 acres |
| Existing | 25 acres |
| Possible | 1,343 acres |
| Future | 10,680 acres |
| **Total Analysis Area** | 15,852 acres |

Existing, possible, and future old growth patches across the analysis area were grouped by old growth forest community type and patch size (see *Figure 1- Old Growth Patch Size Distribution Map*). The table below shows the approximate acreage for each old growth type and patch size. The majority of the analysis area consists of medium-sized patches of future old growth (approximately 10,143 acres). These areas are comprised entirely of unsuitable management prescriptions and will continue to mature and develop old growth attributes into the future.

**Table 12. Old Growth Patch Sizes by Forest Community Type**

| Old Growth Type | Patch Size | Old Growth Forest Community Type | Number of Patches | Total Acres |
|---|---|---|---|---|
| Existing | Small | 21- Dry-Mesic Oak | 3 | 25 |
| | | Total Acres Existing Small Patches | | 25 |
| Possible | Small | 1 - Northern Hardwood Sugar maple | 1 | 15 |
| | | 2a, 2b, 2c - Conifer Northern Hardwood | 1 | 21 |
| | | 5 – Mixed Mesophytic | 6 | 216 |
| | | 21- Dry-Mesic Oak | 34 | 656 |
| | | Total Acres Possible Small Patches | | 908 |
| | Medium | 21- Dry-Mesic Oak | 1 | 435 |
| | | Total Acres Possible Medium Patches | | 435 |
| Future | Small | 1 - Northern Hardwood Sugar maple | 3 | 54 |

| | | | | |
|---|---|---|---|---|
| | | 2a, 2b, 2c - Conifer Northern Hardwood | 2 | 37 |
| | | 5 – Mixed Mesophytic | 15 | 346 |
| | | 21- Dry-Mesic Oak | 4 | 40 |
| | | 25- Dry and Dry-Mesic Oak-Pine | 2 | 60 |
| Total Acres Future Small Patches | | | | 537 |
| | Medium | 5 – Mixed Mesophytic | 6 | 4136 |
| | | 21- Dry-Mesic Oak | 5 | 6007 |
| Total Acres Future Medium Patches | | | | 10,143 |

Direct and Indirect Effects

**Alternative 1 (Modified Proposed Action)**

As stated above, portions of 3 stands proposed for harvest met the operational criteria for old growth forests for old growth type 21-Dry Mesic oak forest type. Currently, there are approximately 207,224 acres of possible old growth forest type 21 on the GWNF and over 50% of it is located in management prescription areas that will maintain the old growth character. Additionally, this old growth type is well distributed around the GWNF. Of the 110 6$^{th}$ level watersheds that contain more than 1000 acres of National forest System lands, 91% have possible old growth forest type 21 that is unsuitable for timber production (Forest Plan. 2014. Appendix B. Old Growth Strategy. B-6).

In recognition of these older age trees and small patches within a historically altered landscape (resulting from fire exclusion and past mining and timbering activities), a modified treatment would be implemented to restore some of the structural attributes characteristic of late open canopy oak woodlands. For these three stands, the silvicultural prescription would be modified as follows: In areas of each stand where the old growth criteria was met by survey protocol, a higher basal area (40-90 sqft) would be retained via variable retention harvesting methods. Cerulean Warblers are a locally rare migratory bird species that exist in the project area and surrounding vicinity. There are opportunities to use forest management practices to mimic the structure and natural disturbance regime of old-growth forests to enhance habitat for Cerulean Warblers. Group selection harvest methods and thinning harvest methods that retain 40-90 basal area, both of which favor oak species, can provide for a diverse canopy and understory structure. Such conditions may help to advance stands toward a late open successional structure that would benefit many avian species, including Cerulean warblers.

Following treatment, Unit 1 would have an overall residual basal area of 40-90 square feet/acre. Units 3 and 6 contain 1 and 12 acres of old growth, respectively, and each would retain a residual basal area of 40-90 square feet/acre in areas with identified old growth. However, the overall average residual basal area across Units 3 and 6 would be between 30-40 square feet/acre, which

would be more aligned with a shelterwood with reserves regeneration harvest. The proposed treatment will not result in the age class being reset for areas containing old growth. Furthermore, the small patches of old growth identified in the harvest units extend beyond the boundaries of the proposed timber harvest areas (see Existing Old Growth Map), and these areas will remain unaffected by the proposed action. However, it is unlikely that the old growth portions proposed for thinning will retain old growth character by definition. This would likely be due to the lack of trees per acre remaining in residual stand that meet age and diameter breast height (DBH) requirements per the protocol. While these areas would likely lose their old growth character by definition, they would align with the departure analysis and desired future condition set forth in the Forest Plan, which recognizes the need for and lack of late open structure.

Guidelines for the selection of trees that would compose the residual basal area would include: wildlife den trees that are hollow or have cavities, shagbark hickory, sugar maple, mature black gum and older hardwood mast species (primarily oaks with an emphasis on white oak and chestnut oak) that exhibit mature large crowns.

**Alternative 2 (No Action)**

No potential impact to existing or future old growth would occur under this alternative. Stands would continue to age and move toward an old growth condition.

Cumulative Effects

There are no additional activities planned in the reasonably foreseeable future which, when combined with past activities and the projects proposed within these alternatives, would have a significant cumulative effect on old growth forests in the area.

*Figure 1- Old Growth Patch Size Distribution Map*

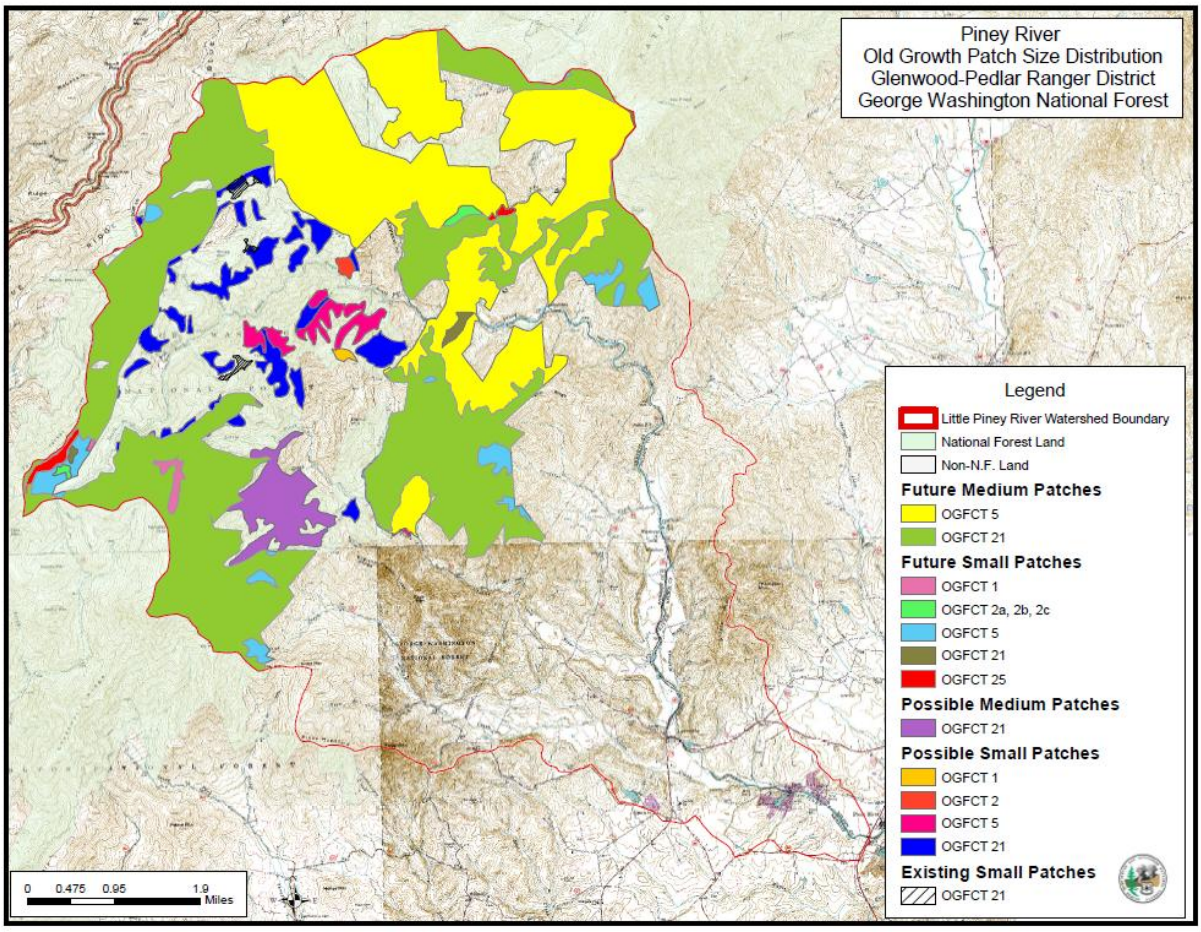

*Figure 2- Existing Old Growth Map*

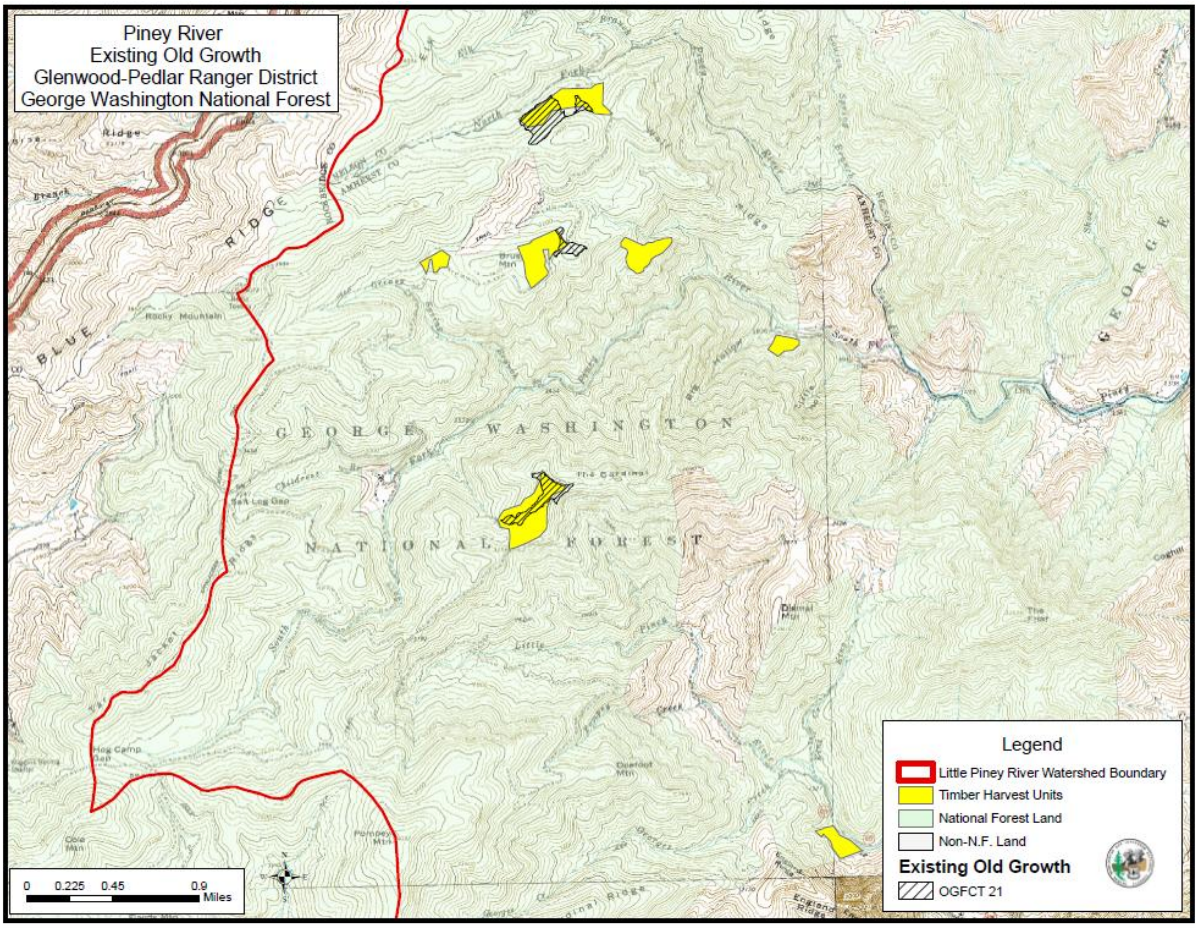

*Figure 3- Possible Old Growth Map*

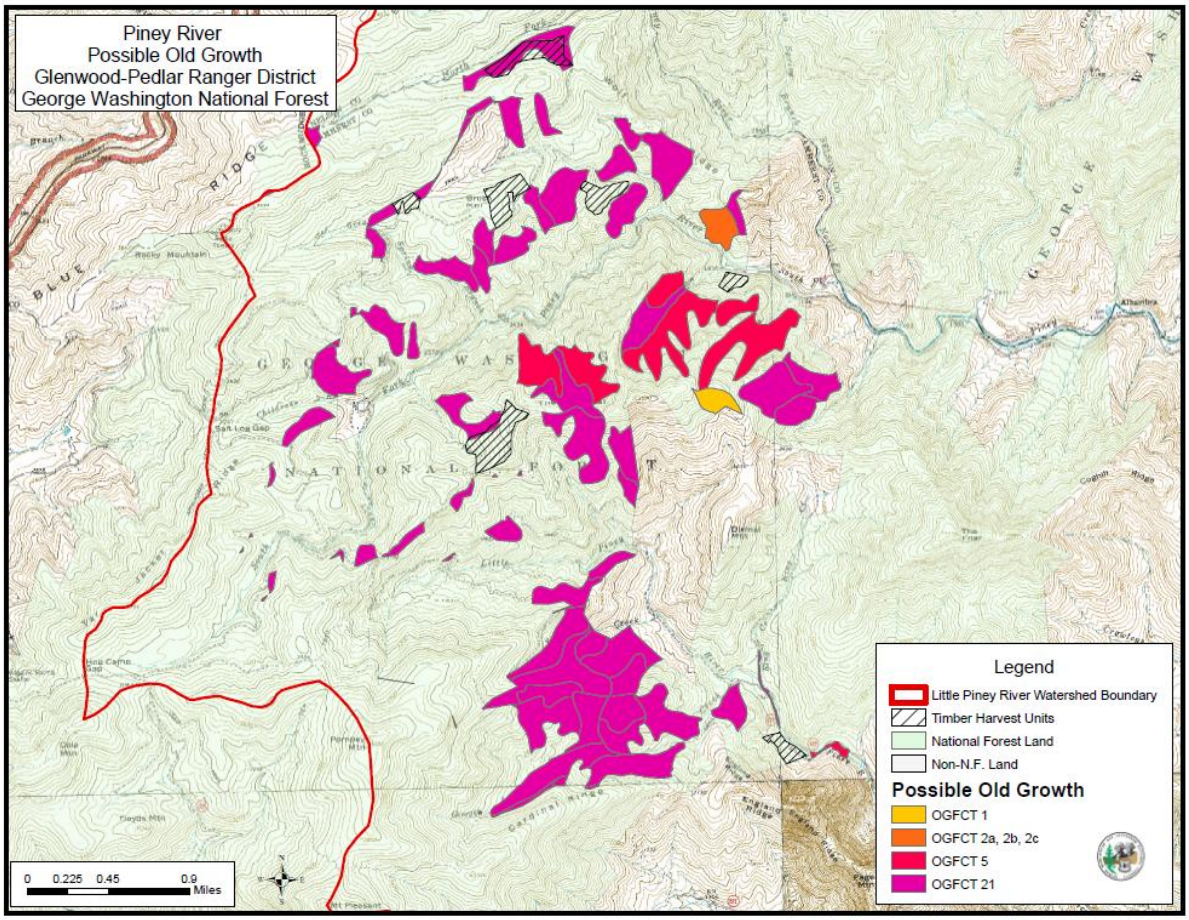
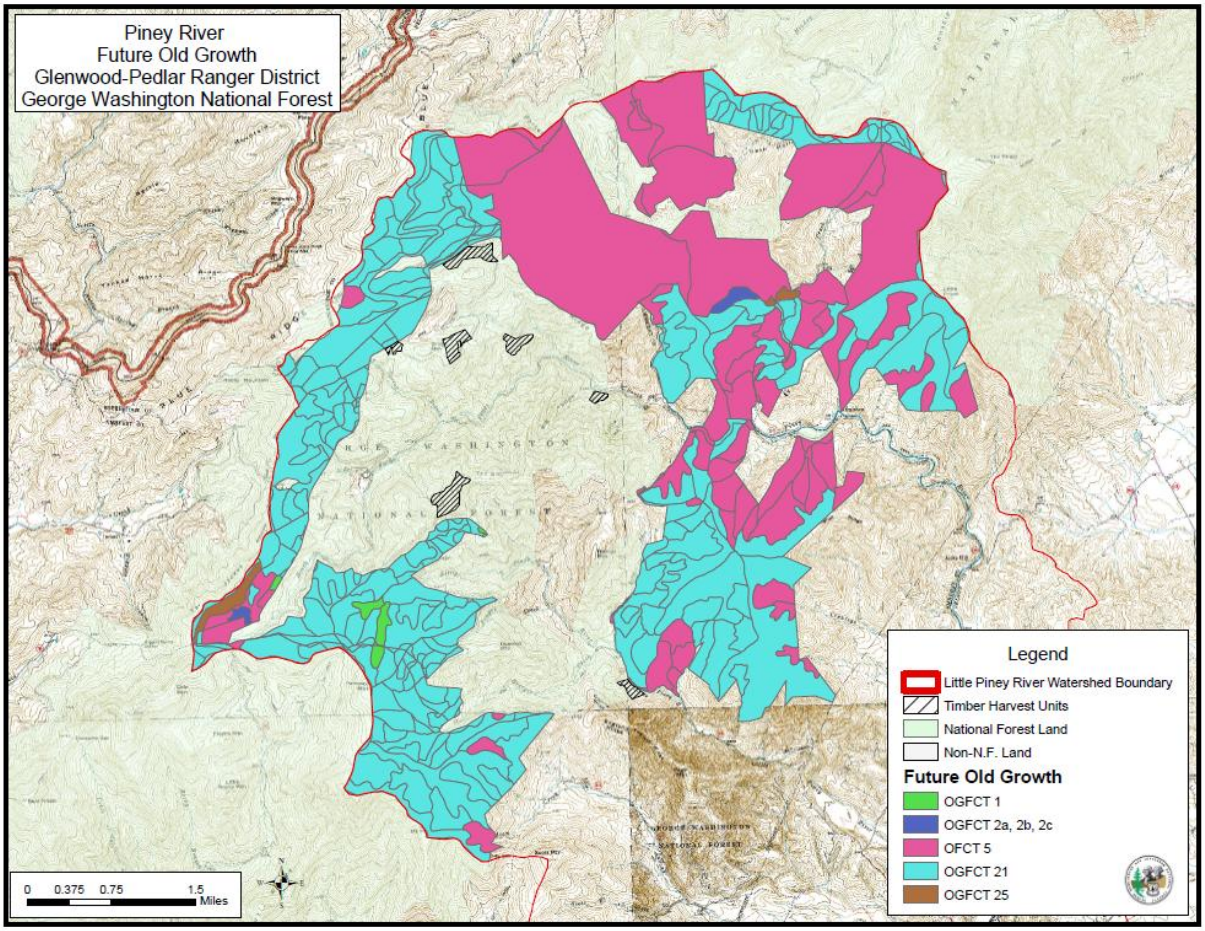
*Figure 4- Future Old Growth Map*